

was called the hammer. Naturally the objects on the membrane changed places on the skin, and by their incidence upon the respective figures, the future was foretold. The figures on the drum are thus identified:—

1. The sun with its beams in four directions, 2. Reindeer paddock (?), 3. Lapp tent, 4. Reindeer, 5-8. Deities, 9. The sacrifice, 10. Boat, 11. Reindeer, 12. Road to peasant's cottage, 13-15. Lapp divinities or norns, 16. Road with 4 human figures, 17. Reindeer enclosure (?), 18. The kingdom of the dead, 19. Magician with drum.

The remainder of the picture shows other Lapps hunting, boating, driving in reindeer sleighs, with the sun in its course visible throughout the entire twenty-four hours, and apparently about 3 A.M. judging from its position, a Lapp storehouse on poles, and sundry other indications of their wandering life.

IV.

March 2, 16, and May 4, 1911.

THE TERMS POLYZOA AND BRYOZOA.

(a)

THE REV. T. R. R. STEBBING made the following remarks:—Like the suit of *Jarndyce v. Jarndyce*, the controversy between the terms Polyzoa and Bryozoa seems almost interminable. An attempt to settle it ought to be welcome. For this purpose it is desirable to confront the arguments on each side.

The late Mr. Busk, in his monograph of the Crag Polyzoa, 1859, after mentioning that Milne-Edwards had proposed to distinguish this group from the hydroid polyps by the name of 'Polypes tuniciers,' goes on to say:—"Another independent observer, however, Dr. John V. Thompson, of Cork, was also at work on the same subject, the results of whose researches, apparently commenced in 1820, were not published till December 1830, in the first part of his 'Zoological Researches and Illustrations.' He, like M. Milne-Edwards, recognising the close affinities presented in the structure of the animals to that of the compound Ascidians, was the first to propose for them an appellation wholly independent of their former incongruous allies, the hydroid 'Polypes.' The term he employed was 'Polyzoa,' it 'being applied,' as he says, 'to a distinct class of Polypes hitherto in great measure confounded with the Hydroida.' But it is to be remarked that he used the word in the singular number, so that the plural term, 'Polyzoa,' as now employed, though etymologically more correct, is not in reality synonymous with that of Dr. J. V. Thompson. This fact, which appears to have been strangely overlooked till 1852, may fairly enough be used as an argument in their favour by those who are inclined to prefer the Ehrenbergian term 'Bryozoa.' But as this preference, which is still extensively prevalent, more especially on the Continent, is based simply on the supposed priority of Professor Ehrenberg's appellation,

n claim which has been shown to be wholly untenable, it is scarcely likely that British naturalists will refuse the honour justly due to Dr. J. V. Thompson, for what can scarcely perhaps be regarded as a sufficient reason."

In a footnote Busk refers to his own article "On the Priority of the Term 'Polyzoa' for the Ascidian Polypes" (Ann. Nat. Hist. 2nd series, vol. x. p. 352, 1852). He there convincingly shows that December 1830 (date of Polyzoa) is earlier than March 1831 (first mention of Bryozoa). But he is apparently unaware how the importance of this undeniable fact is undermined by other considerations.

J. Vaughan Thompson was a man of renown who dimmed the lustre of his researches by his confused manner of expounding them. The fifth memoir of his 'Zoological Researches,' which is here in question, is entitled "On Polyzoa, a new animal discovered as an inhabitant of some Zoophytes, with a description of the newly instituted Genera of *Pedicellaria* and *Vesicularia*."

At p. 94, Thompson says:—"This new animal, the Polyzoa, was subsequently found in *Sertularia Cuscuta*, *Spinosa*, and *Pustulosa*."

At p. 96, he says:—"The discovery of the Polyzoa was made in the summer of 1820; during the subsequent and following seasons, an exactly similar structure was noticed in the other species above enumerated, and in a new type which perhaps merits to be distinguished as a separate genus, under the title of *Pedicellaria*."

It thus appears that Polyzoa and Bryozoa are not really comparable, the latter being of ordinal and the former of generic value. Now, according to Scudder's 'Nomenclator Zoologicus,' Polyzoa was instituted by Lesson as a mollusean genus in 1830, while, according to Cuvier's 'Règne Animal,' vol. iii. p. 385 (1830), Lesson's 'Manuel de l'Hist. des Mollusques' was in fact published in 1829, so that Thompson's Polyzoa, published in December 1830, was void by preoccupation.

(b)

Note on J. V. Thompson's use of the term "Polyzoa."

By Prof. W. A. HERDMAN, F.R.S., F.L.S.

I HAVE read with much interest the report of the remarks made by the Rev. T. R. R. Stebbing, at the last meeting of the Society, in regard to the use of the term "Polyzoa" in the title of one of the papers then communicated to the meeting. There are several distinct points that can be raised in the controversy as to the use of the terms "Bryozoa" and "Polyzoa." The only one that I desire to remark upon now is Mr. Stebbing's contention that Dr. J. Vaughan Thompson, in his publication of December, 1830, intended to use the term "Polyzoa" as a generic title, and that as such the name was pre-occupied by Lesson's institution of a Molluscan genus in 1829. I am sorry that an examination of J. V. Thompson's 5th Memoir, in the 4th part of his 'Zoological Researches and Illustrations,' leaves me unable to agree with Mr. Stebbing that Thompson used "Polyzoa" as a generic name. Several passages in the memoir seem to me to show clearly that

the author was arguing that sets of species included under several different genera, and even distinct families, had the structure which he was describing under the term "Polyzoa" and, therefore, ought to be removed from the groups with which they had previously been associated. For example, after saying that some of the Sertularian Zoophytes would require to be so removed, "as well as such *other genera* [italics mine] as may hereafter be found similarly circumstanced," he goes on (Mem. 5, p. 92) to say:—"I shall merely indicate here in a general way the whole of the Flustraceæ, in many of which I have clearly ascertained the animals to be Polyzoæ." Surely this indicates that he recognised that whole families and genera would find their proper places in his new group?

Then again, on page 97, he refers some of the species of "Sertularia" (which, by the way, from another passage he evidently regards as a "Family"), in which he has found the animals to be Polyzoa, "to *one* genus"; but that does not mean one genus "Polyzoa," for, a few lines below, he proposes the name "Vesicularia" for this genus, showing clearly that he did *not* regard his term "Polyzoa" as a generic title, and that *Vesicularia* was only one set of species in the larger assemblage Polyzoa which he was creating. Thompson was in the habit of printing a generic name at the foot of each of his plates—such as *Nebalia*, *Noetiluca*, etc., in previous Parts of his 'Zoological Researches,'—and below the plates of this "Polyzoa" memoir we find the name "Vesicularia," as one would expect from the text. It is clear then, on all these grounds, that he did not regard "Polyzoa" as a genus.

Finally, in the last paragraph of this paper (p. 100) he says:—"Time and more accurate observations will no doubt add many more species to the above genera, etc." That is, genera of which he had demonstrated the Polyzoan structure or nature. It is therefore obvious that he could not and did not regard the whole assemblage of such genera as one genus to which he was applying the term "Polyzoa," as Mr. Stebbing would apparently have us believe.

In short, I consider that John Vaughan Thompson knew what he was about, and that although in places his language is a little quaint his meaning is clear: that he was the first to recognise the essential points in Polyzoan structure, as seen, for example, in the genus *Vesicularia*, or in the larger group "Flustracea," and that he described and figured these adequately in December, 1830, in a memoir entitled "On Polyzoa," etc. The very title of his memoir shows that he did not put Polyzoa forward as the name of a genus, since it cites *Pedicellaria* and *Vesicularia* as the two new genera he is placing in the larger group Polyzoa. Is that clear recognition and demonstration of a group of allied genera collectively named "Polyzoa" invalidated by the fact that Lesson a few months before applied the term Polyzoa to a genus of Tunicata?

March 11th, 1911.

W. A. HERDMAN.

(c)

ON JOHN VAUGHAN THOMPSON and his Polyzoa, and on *Vaunthompsonia*, a genus of Sympoda. By the Rev. T. R. R. STEBBING, M.A., F.R.S., F.L.S.

JOHN VAUGHAN THOMPSON was born in 1779 and died in 1847. The Linnean Society with prophetic instinct elected him a Fellow on February 6th, 1810. It would be an honourable thing to commemorate that centenary by a re-issue of his writings, which are small in compass, difficult to obtain, but of great historic interest and value. In 1830 he made a pathetic appeal to the scientific world to furnish him with a hundred and fifty subscribers, as his private income would no longer bear the sacrifice till then entailed by the publication of his researches. He had good reason to be proud of his "discoveries," though he may not have been the first to make them. That is the lot of all discoverers, as Columbus, for example, in finding the New World found it already peopled by men who had known it before he was born. None the less, Vaughan Thompson was a foremost leader in proving that cirripedes (Thyrostraca) are crustaceans and that crustaceans as a rule pass through metamorphic stages. He was also undeniably in the vanguard of those who proved that the term Zoophytes had been used to cover a mixture of animals superficially alike but essentially different in structure.

In regard to this latter part of his investigations, a curious terminological dispute or difference of usage has arisen. While practically all Continental and American writers speak of a class Bryozoa, a very distinguished section of British experts apply the name Polyzoa to a class identically the same. Possibly the arguments in favour of either term may be so evenly balanced that after discussion we shall leave off where we began, each side thinking that it has had the better in the controversy and applying to those of the opposite opinion the French proverb "*Chacun à son goût*," or, as sometimes amplified, "*Chacun à son vilain goût*."

On the one hand, then, it may be urged that no confusion can arise from the retention of both the terms. They have become perfectly familiar as equivalents. Some writers even head their treatises "*Bryozoa or Polyzoa*," as though it were a matter of complete indifference, and perhaps wishing to insinuate to the disputants "*a plague on both your houses*." Further, it is clear that the names of classes and orders have never been subject to so strict a discipline as the names of genera and species, probably because, while the limits of the higher divisions remained essentially unstable, fixity in their designation has been felt to be inconvenient or unreasonable. In fact, as Lord Walsingham has urged in the introduction to his Merton Code, the moral law, the law of giving every man his due, is the strongest foundation on which any precise methods can be based.

Again, it may be argued that any defect in the form of

Thompson's term Polyzoa is venial, considering the date of its publication. Thus in 1814 Leach named an order Podosoma, which in 1816 he silently corrected into a proper plural Podosomata. In 1843 the French author René Primevère Lesson recalls the family Plethosoma which he had established in 1828, in order at the later date to make of it a tribe, with the name unaltered, and including in it a genus also named *Plethosoma*.

It will be no breach of confidence, I think, to quote the unpublished words of a leading authority on this subject, who writes to me as follows: "I base my action on two considerations: (1) That Thompson was the first to recognize the Polyzoa as a distinct type of structure in the Animal Kingdom; and, moreover, introduced a name that can quite fairly be used as that of the Class or Phylum. (2) That a large proportion of the work that has been done on the group has been done by men who have consistently spoken of these animals as the Polyzoa. I need only mention Busk, Allman, Hincks, Norman, and perhaps Hyatt in America."

As a matter of fact, it was apparently Dr. Gray in 1840 who first gave currency to Polyzoa (in the plural) as the name of an extensive animal group, while Busk by his arguments in 1852 and 1859 procured for it vogue among his English followers. It may just possibly be contended that Thompson himself used Polyzoa in the plural number, since on page 92 of his Memoirs he says: "The Polyzoa will probably be found in many dissimilar Genera of the Zoophytes, and even mixed up with Hydra in some, as they appear to be in the Sertularia of authors." It should suffice to say that the very paragraph in which this ambiguous "they" occurs ends with the genuine plural Polyzoæ. But yet again on page 96 we read "the Polyzoa however are essentially different." That this is merely a slip of the pen or a printer's error seems absolutely certain, since we have Polyzoæ on page 97 and on page 99, and the Introductory Address, incorporated in Vol. I. of the Researches, promises a future article on "Animals of some Cellariæ, Tabuliporæ and Flustraciæ, proved to be Polyzoæ."

That Thompson's use of the word Polyzoa antedates Ehrenberg's introduction of the name Bryozoa cannot be denied.

Whether these various considerations, or any others which I have failed to discover, justify our eminent English authorities in their usage of the term Polyzoa, is a question now to be presented from an opposite point of view.

Strangely enough the first witness to be called is Busk, the very *fons et origo mali*, as evidence himself against himself. Speaking of Vaughan Thompson, he says, "It is to be remarked that he used the word in the singular number, so that the plural term 'Polyzoa,' as now employed, though etymologically more correct is not in reality synonymous with that of Dr. J. V. Thompson." And he adds that this fact "may fairly enough be used as an argument in their favour by those who are inclined to prefer the

Elhrenbergian term Bryozoa." What amazing candour on the part of an advocate for the use of one term, when he declares that fair argument is in favour of our using the other. Here, too, it should be remembered that Busk's action had to be judged by itself at the time when it was taken. It could not rely on a long list of famous experts in 1852. Allman and Hincks, Norman and Harmer, Herdman and Gardiner, Nicholls and Thornely, Kirkpatrick and Annandale, had not yet either written on the subject or expressed any opinion on its proper title.

Observe, further, that Busk's article in the 'Annals' of 1852 is "On the Priority of the Term 'Polyzoa' for the Ascidian Polypes." As a very imperfectly informed amateur on this branch of zoology, I venture to ask the learned disciples of Busk whether the animals which they call Polyzoa *are* Ascidians. They will in their answer no doubt give away their tutelary genius. But Busk himself would probably have paused in upholding what he supposed to be Thompson's claim, had he been conscious of the fact that, prior to the publication of Thompson's memoir, R. P. Lesson, in the 'Voyage de la Coquille' (vol. ii. p. 437), had already used *Polyzoa* in the singular number for a genus of compound ascidians. He would probably have thought it quite inexpedient to have a word, undistinguishable in sound and spelling from that generic name, as appellation of a much higher group.

Here it is right to confess that Lesson's 'Manuel de l'histoire des Mollusques,' to which I referred in the Linnean circular for 2nd March, 1911, has not proved to be procurable either in France or England. But the same Lesson in his 'Histoire naturelle des Zoophytes,' p. 56, 1843, declares that his contribution to the zoology of 'La Coquille' was "tiré à part et mis en commerce" in 1829. The priority, therefore, of Lesson's Polyzoa over Thompson's can scarcely be disputed. Whether in Zoology it is desirable, allowable, or in accordance with any good precedent, that a name previously adopted for a genus should be independently repeated as the name of a class or phylum, it would be presumptuous in me to decide. Branchiopoda, I admit, has been sometimes retained for an Entomostracan order, very likely from ignorance of its earlier employment as a generic name by Lamarek in 1801.

But surely no rare exception, if any valid one can be found, ought to be followed in the present instance, for why should a claim be asserted for Thompson which he never made for himself? Some stress has been laid on the words which he uses in regard to his Polyzoa (p. 92), that "this discovery must be the cause of extensive alterations and dismemberments in the Class with which they have hitherto been associated." But in the very same paragraph he immediately proceeds, not to establish a new Class, but simply to transfer all such species and genera as contain his "new animal" from the class Zoophytes to the class Mollusca acephala, adding, "I shall merely indicate here in a general way

the whole of the Flustraceæ, in many of which I have clearly ascertained the animals to be Polyzoæ."

Now, in regard to that last remark, without casting the slightest imputation on Thompson's originality, one must again appeal to Busk, who, publishing in 1859, says: "Thirty-one years ago, Dr. Grant, in some 'Observations on the Structure and Nature of Flustræ,' drew, for the first time, a distinction between the animals inhabiting those growths, and the Sertularian, or Hydroid Polypes, with which they had previously been associated." These Observations by Dr. R. S. Grant appear in the Third volume of the Edinburgh New Philosophical Journal (pp. 107, 337), which is dated 1827, so that he has two years precedence of Thompson and three of Ehrenberg. A nice flustration there will be if we start a new school of writers calling the class Flustræ! And yet in the language of Busk, "It is scarcely likely that British naturalists will refuse the honour justly due to Dr. R. S. Grant, for what can scarcely perhaps be regarded as a sufficient reason."

Seriously speaking, in the face of Busk's admission that it was Grant who, for the first time, drew the distinction, it can scarcely be maintained that Thompson was the first to recognize the Polyzoa as a distinct type of structure in the Animal Kingdom. This is no denial of his statement that "the discovery of Polyzoa was made in the summer of 1820." My own belief is that, had he published in 1820, he would have made a new genus Polyzoa for the *Sertularia imbricata* of Adams. But, as we all know, recognition of our discoveries has to date, not from the time when they were made, but from the time when they were published. For aught we know, Grant also may have carried out his observations ten years before he made them public.

As an observer of nature Thompson was in the highest degree keen and admirable; in nomenclature he was almost equally erratic and unmethodical. Witness his vacillating use of Shizopoda and Shizopodæ for the Schizopoda of Latreille, his unmeaning name *Nocticula* for a luminous shrimp, his unjustified change of that shrimp's specific name from *fulgens* to *banksii*, his adoption of *Cynthia* and *Pedicellaria* for new genera, though he was avowedly aware that each had been previously used in a different sense.

That Polyzoa either in the singular or plural is not a term worth contending for in respect of its appropriateness, should be felt at least by members of that famous University which claims the fine scholarship of Milton and Gray, of Porson and Munro, for the Greek word *πολύζωος* happens to mean long-lived, not many-animated, and even if it had the latter meaning it would be undistinctive, being equally applicable to many species in quite different groups. But some witchcraft must have put a spell upon Thompson in respect of names. When he has to mention the *Cancer scorpioides* of Montagu, he calls it *scorpionurus*. After his death he leaves behind him a manuscript genus *Scorpionura*, once more a preoccupied name. In place of this Spence Bate founded on the words Vaughan Thompson a new concoction. But the

spell still works. Again there is vacillation. Again there is controversy. To my mind it is clear that in 1858 Bate called his genus *Vaunthompsonia*, that in 1859 he changed it to *Vaunthomsonia*, and finally in 1860 decided for *Vauntompsonia*. But another oracle maintains that the *tomp* was earlier than the *thomp*. We must wait and see.

Now all this slight skirmishing may easily and perhaps justifiably be dismissed with the remark, that the argument against Polyzoa is advanced by one who has little or no intimate acquaintance with the subject matter in which he is interfering. But there is at least one writer, a Fellow of this Society, against whom such a reproach cannot possibly be urged. It may well be that some of us are ill acquainted with the arguments on this topic powerfully stated by the veteran Bryo-zoologist, A. W. Waters, so far back as 1880. But all those in the least interested in the matter are bound to have taken into account his paper of December 16th, 1909, published in our Journal so recently as the 22nd of June, 1910. Nevertheless, to refresh our memories, I shall do myself the pleasure of quoting his two concluding paragraphs. He writes:—"As a young man when I presented papers, those in authority said, you should not use Bryozoa when Busk and others use Polyzoa. I pointed out my reasons and induced them to examine Thompson's paper, and they all, without exception, said they considered I was quite right and that there could not be any question of Thompson using Polyzoa as a class name. Such able literary and scientific critics as Mr. Dallas and Dr. Francis became quite convinced, and Mr. Dallas in a review of Hincks's book put the question more clearly than it has been put by anyone else. A number of members of the staff of the British Museum working upon invertebrates met together to examine Thompson's paper, and unanimously came to the conclusion that Polyzoa was not given as a class designation.

"Bryozoa was for a long time used in England, and then Busk introduced Polyzoa as being Thompson's name. I was not surprised that Busk, Allman, and Hincks, who had worked together, did not change, but I felt confident that the change would soon be made by a younger generation. In this I seem to have been mistaken; and so long as any of our leaders use Polyzoa we must recognise that there are two sides to the question, though I find it very difficult to understand how this can be if we try to divest ourselves of the knowledge gained since Thompson's time and put ourselves in his position." (Journ. Linn. Soc., Zool. vol. xxxi. p. 247.)

You will not fail to notice the modesty of that conclusion. It warns me not to alienate goodwill by being too self-assertive, and to bring my treatment of the matter to an end, before you become too sorry that it ever had a beginning.

On *Vaunthompsonia*, Bate.

For the difficulties which beset our use of this generic name, Vaughan Thompson, in whose honour it was invented, is only indirectly responsible. The genus belongs to the Sympoda, for long but very unsuitably known as Cumacea, in dealing with which among many eminent names there are, I think, pre-eminent, Kröyer in Denmark, Sars in Norway, and our own Dr. Calman in England. Now in this remarkable group Thompson, as already intimated, promised but never gave "Detail of the curious structure of several species of the newly instituted Genus *Condylura* (*Cancer Scorpionurus* of Montagu)." No doubt he intended to refer to "*Cancer Scorpioides*" of Montagu, but among his collections there were subsequently found specimens labelled as three species of a new genus *Scorpionura*. Here he had once again the misfortune to choose a name preoccupied before his own use of it was published. Thus it came about that Spence Bate instituted the genus *Vaunthompsonia* for one of Thompson's three species. For the record of this genus we are indebted first of all to Professor Kinahan, through the 'Natural History Review,' vol. v. pp. 202-205, 1858. The professor there says, "I have extracted Mr. Bate's communication and figures *in extenso* from the 'Journal of the Royal Dublin Society,' before whose evening meeting of the 28th May it was read." The definition of *Vaunthompsonia* (Spence Bate) is included in the communication. Next year, in the 'Annals of Natural History,' ser. 3, vol. iii. pp. 273-274, no. 16 for April 1859, Spence Bate speaks of the genus *Vaunthomsonia*, recently described by me in the 'Natural History Review.' Then finally, in the 'Journal of the Royal Dublin Society,' vol. ii. 1858-1859 (Dublin: Hodges, Smith, & Co., 1860), pp. 101-104, he defines *Vaunthompsonia*, n. g. In 1905, however, Dr. Calman argues that this last form has priority. Of *Vaunthompsonia* he says that "it is used in Spence Bate's paper in the Nat. Hist. Review, which appears to be a reprint of, and was probably later than, that in the J. Royal Dublin Soc., in which the aspirate is omitted. In any case the omission was clearly intended by the author, who states that in building up the word the Christian name and the surname of Mr. Vaughan Thompson have been "both spelled according to sound." But the 'Natural History Review' of 1858, in which Bate's paper appeared through the intervention of Kinahan, recorded the Proceedings of various Irish Societies, much as 'Nature' and 'The Athenæum' nowadays record the Proceedings of many Societies, as a rule far in advance of the Journals of the Societies themselves. There is no reason for thinking that the 'Journal' of the Royal Dublin Society, published under the date of 1860, was earlier than the 'Natural History Review' of 1858. But there is a reason for thinking that it was later, since, as already mentioned, Spence Bate in April 1859 speaks of the genus *Vaunthomsonia*, recently described

by me in the 'Natural History Review.' Why should he refer to that Review, if the genus had been published still earlier in the Royal Dublin Society's Journal, and why should he retain the aspirate, if he had already entertained the happy idea of rejecting it? It is evident that, contrary to modern notions, he thought that he had a right to do what he liked with his own. So he first wrote *Vaunthompsonia*, as recited by Kinahan in 1858. Then in 1859 he improved this into *Vaunthomsonia*, and finally in 1860 he dropped the aspirate but resumed the *p* in the form *Vauntompsonia*. Modern rules require that we should revert to the first published *Vaunthompsonia*.

Against retaining Cumacea, proposed by Kröyer in 1846, I venture to indulge the vanity of quoting from my friends Dr. Norman and Dr. Brady, who in their 'Crustacea of Northumberland and Durham,' p. 25, say, "The name *Cuma* of Humphreys, 1795, being in use for a genus of Mollusca, the Rev. T. R. R. Stebbing has discarded it among Crustacea, substituting for it *Bodotria* Goodsir, and for the order Cumacea the more appropriate name Sympoda."

Not only was *Cuma*, as used by Milne-Edwards, a preoccupied name, but apparently it had the further disadvantage of embalming an error to which that great naturalist obstinately adhered in regard to the Sympoda. He thought that his specimens were embryonic, and in naming a genus for them he chose a Greek word meaning among other things "an embryo." But, apart from the misfortunes of its origin, this genus had no right of priority in determining the name of the order, since *Diastylis* had been well defined by the American Say ten years earlier. In Sympoda we have a form corresponding with Decapoda, Schizopoda, Stomatopoda, Isopoda, and Amphipoda, all of them important divisions of the Malacostraca.

(d)

MR. S. F. HARMER did not agree with Mr. Stebbing's conclusions. He pointed out that the Laws of Priority which govern generic and specific names do not apply with equal force to group-names. He regarded the criticism that Thompson usually (though not always) employs "Polyzoa" as a singular word as comparatively unimportant when taken in conjunction with the broad conclusion which Thompson saw so clearly, that the observations he had made would "render extensive alterations and dismemberments" in classification necessary. The title of Thompson's memoir shows indeed that "Polyzoa" is not a generic term, but is of higher value: in other words, that it is a group-name. The priority of "Polyzoa" over "Bryozoa" is admitted, and there is evidence that it was used by Thompson even earlier than December, 1830, the date on the wrapper of No. IV. of the 'Zoological Researches,' which consists of "Memoir v, On Polyzoa." The wrapper of No. III., which is headed January,

1830, bears the announcement (dated by Thompson December, 1829) that the Fourth Number will contain "a Memoir on *Polyzoa*, a new animal discovered as an inhabitant of some Zoophytes." The speaker considered that Thompson's clear realisation of the effect his discovery must have in altering current views with regard to the classification of Zoophytes constitutes ample justification for preferring "*Polyzoa*" to "*Bryozoa*."

(e)

MR. A. W. WATERS said that his reasons for using the term *Bryozoa* were given many years ago, and he had recently restated his firm adherence to the view arrived at. But it will be well to first clear up a mistake which has misled many, for most naturalists have looked to Busk's '*Crag Polyzoa*' to see why he changed from *Bryozoa* to *Polyzoa*; and speaking of Thompson, Busk writes: "The term he employed was *Polyzoa*, 'it being applied,' as he says, 'to a distinct class of Polypes hitherto in great measure confounded with the *Hydroida*': although this is given as a quotation, in inverted commas, Thompson never said anything of the kind, and a critical examination shows how impossible it would have been for him to have written it.

The speaker said his point had always been that Thompson gave no indication that he was establishing a class. The paper is on "*Polyzoa, a new animal discovered as an inhabitant of some Zoophytes*," and then he speaks of the animal as *Polyzoa*, and this idea of the animal being a *Polyzoa*, but the animals *Polyzoæ*, is repeated several times in the paper. Thompson considered that a certain section of the zoophytes must ultimately be separated, as the polypides were not hydra, and we must remember that at that time the polypes of *Hydrozoa* were still spoken of as flores, and there were perhaps naturalists still living who had believed that the polypides of *Flustra* could leave the zoecium whenever they wished, just as a bee can leave its cell.

A year before Thompson's paper, Cuvier had separated the *Bryozoa* as "*Polypes à cellules*" as a distinct family from "*Polypes vaginiformes*," namely the *Hydrozoa*, but said the animals in both cases resemble *Hydræ*.

It has been urged that Thompson having seen the great difference between the *Bryozoa* and other zoophytes, we ought to honour him by retaining the name *Polyzoa*. However, if he did not create the class we must remember that he was not the first to publish the difference, for Dr. Grant (1827) had seen that a separation must be made, and he based it upon the *Bryozoa* having no common cœnosare, but, though he described the polypide correctly, he did not recognise that the digestive tract had two openings. Then Audouin and Milne-Edwards (1828), studying the marine invertebrates of Chausey, divided the Polypes, or Zoophytes, into four families, and these were, as we should say,

approximately (1) Sponges, (2) Hydrozoa, (3) Anthozoa, and (4) Bryozoa; and of this last they said, *our fourth family contains Flustra and the other Polypes of which the digestive canal communicates with the exterior by two distinct openings, and of which the organisation approaches that of the compound Ascidians.* At the meeting of the French Academy, when the paper was read, Blainville stated that he was aware of this structure, and that it had been also pointed out to him some years ago by Lesueur and Desmarest; so that several observers had independently come to the same conclusions, within a few years of one another.

It is strange to find these divisions called families, where we should say orders and classes, but nothing could be clearer than that Audouin and Milne-Edwards forestalled Thompson and distinctly indicated a division, for we must not forget that *Flustra* then always included *Membranipora* and was sometimes used where we should say Cheilostomata. It is surprising how seldom zoologists of that period, working on the zoophytes, ever refer to Classes or Orders, and often use class as a general term instead of group. Lamarck, in 'Hist. Nat. des Animaux sans Vertèbres,' instead of classes and orders, says divisions and sections.

In conclusion, if Thompson meant to establish a class division, then his paper is an extraordinary muddle of a communication; whereas, if he wished to indicate the nature of the polypide, it is consistent from beginning to end, and though forestalled in his main points we must respect him for it.
